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State of California—Health and Human Services Agency
California Department of Public Health



ARNOLD SCHWARZENEGGER
Governor

March 21, 2008

Dear Colleague,

The use of facemasks and respirators is one infection control measure that could be helpful in reducing disease transmission during an influenza pandemic. While there is evidence of facemask and respirator effectiveness in reducing transmission in occupational settings, information on their use and effectiveness by the public in community settings for pandemic influenza is extremely limited. In May 2007, the Centers for Disease Control and Prevention (CDC) issued guidance on the use of facemasks and respirators by the public during an influenza pandemic, based on public health judgment and the historical use of facemasks and respirators in other settings. This guidance is available at:

www.pandemicflu.gov/plan/community/maskguidancecommunity.html.

The California Department of Public Health (CDPH) is issuing *Recommendations for Use of Facemasks or Respirators by the Public during an Influenza Pandemic* (February 2008). CDPH concurs with the CDC guidance on the use of facemasks and respirators by the public in non-occupational settings, and recognizes that public use of respirators and facemasks, especially in high risk or crowded settings, is better than no protection at all. The use of facemasks and respirators should be only one element of an overall strategy for protection during an influenza pandemic, including respiratory etiquette, hand hygiene, social distancing, isolation of the ill, and pharmaceutical interventions.

Please address any questions or comments about the *Recommendations for Use of Facemasks or Respirators by the Public during an Influenza Pandemic* to Dr. Howard Backer, CDPH Immunization Branch at howard.backer@cdph.ca.gov.

Thank you for your ongoing pandemic influenza planning and preparedness efforts.

Sincerely,

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Enclosure: Recommendations on Facemask and Respirator Use by the Public during an Influenza Pandemic



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Recommendations for Use of Facemasks and Respirators by the Public during an Influenza Pandemic March 21, 2008

Introduction

During an influenza pandemic, no single action will provide complete protection from becoming ill, but the risk can be reduced by using a combination of simple actions: respiratory etiquette and hand hygiene, isolation of sick persons, treatment of persons with confirmed or probable influenza with antiviral medications, quarantine of contacts or household members of confirmed or probable influenza cases, reduction of unnecessary social contacts and avoidance of crowded settings, whenever possible.

Vaccination is considered the most effective way to interrupt transmission of influenza, but a vaccine targeted to the pandemic strain will not be available early in a pandemic. In addition, the effectiveness of currently available antiviral medications for treatment or prevention of pandemic influenza is unknown. Therefore, the main interventions to reduce influenza transmission early in a pandemic will be infection control measures and "social distancing" to reduce contact between people.

The use of facemasks and respirators is one infection control measure that could be helpful in reducing disease transmission, but information on the use of facemasks and respirators for pandemic influenza in community settings is extremely limited; therefore, it is difficult to assess their real potential to reduce transmission. In May 2007, the Centers for Disease Control and Prevention (CDC) issued guidance on the use of facemasks and respirators by the public during an influenza pandemic. This guidance is available at:

<http://www.pandemicflu.gov/plan/community/maskguidancecommunity.html>

In the absence of clear scientific data, CDC developed interim recommendations based on public health judgment and the historical use of facemasks and respirators in other settings. CDC and CDPH guidance will change if new evidence on the effectiveness of masks and respirators in community settings becomes available.

Facemasks and Respirators

Although they may look similar, facemasks (typically called surgical masks) and respirators (also called disposable filtering facepiece respirators, such as the N95 respirator) are very different in design. Facemasks help contain droplets expelled by

the wearer and should be worn by sick people for this purpose. Facemasks may offer some protection to the non-ill person from contacting large droplets expelled by others. Facemasks generally do not fit tightly to the face and small droplets from other people can pass around or through the mask and be inhaled.

Respirators are designed to protect the wearer from breathing in small particles, including most viruses. They are intended to fit tightly to the face so that inhaled air primarily passes through the filter material; any leakage of air through gaps in the face seal allows the wearer to inhale some unfiltered air. A respirator may offer better protection to the wearer than a facemask if a high-risk setting for exposure to influenza cannot be avoided, such as providing direct care for an ill family member or unavoidable crowded areas. Respirators rated by the National Institute of Occupational Health and Safety (NIOSH) and labeled as "NIOSH-certified" (e.g., NIOSH-certified N95, N99, or P100 respirators) can often be found in hardware stores or pharmacies.

When used in occupational settings (e.g., hospitals, clinics), the U.S. Occupational Safety and Health Administration (OSHA) requires workers to be medically cleared and "fit-tested" prior to the first use of a filtering facepiece respirator (e.g., N95). Fit-testing identifies a well-fitting respirator model and size, and ensures the user can achieve a good seal between the respirator and the face.

For use of a respirator in the home setting, instructions for how to put on the respirator and perform a modified fit-test can be found in the product information. When purchasing a respirator, it is important to choose one that fits well, conforms to the face, and provides a good seal around the nose and mouth. The user should shave any facial hair where the respirator seals to the face, position one strap at the crown of the head and the other at the back of the neck, and tighten the nose clip. Although information on the use of respirators in the public or non-occupational settings is limited, a self-fitted N95 respirator may offer more protection than a facemask if well-fitted and worn at all times in a high-risk setting.

No facemask or respirator can guarantee full protection. Respirators are not suitable for everyone, since they can be difficult to breathe through (particularly for people with respiratory disease), and many people can't tolerate wearing them for more than a few hours at a time. Respirators do not seal properly to the faces of men with facial hair and are not currently available in children's sizes in the U.S.

More information on masks and respirators for the public is available at:
<http://www.cdc.gov/Features/MasksRespirators/>

Masks and Respirators in the Workplace

OSHA has issued guidance for facemask and respirator use in the workplace and recommends that employees with a high risk of exposure to pandemic influenza (e.g., health care workers) use respirators. Jobs involving high-frequency, close contact with the public are considered medium-risk, and use of facemasks or respirators may be appropriate. Neither facemasks nor respirators are recommended for employees at lower risk of exposure to pandemic influenza, as in typical office settings. OSHA's guidance also states that "employers should consider stockpiling facemasks and respirators" and provides stockpiling estimates for facemasks and respirators.

The OSHA guidances are available at:

http://www.osha.gov/Publications/influenza_pandemic.html

[http://www.ahcancal.org/facility_operations/disaster_planning/Documents/OSHA Proposed Guidance on Stockpiling Respirators.pdf](http://www.ahcancal.org/facility_operations/disaster_planning/Documents/OSHA_Proposed_Guidance_on_Stockpiling_Respirators.pdf)

During a pandemic, local public health officials may issue guidance for the public recommending or requiring the use of masks and respirators in public venues (e.g., public transportation, in the workplace, unavoidable crowded settings).

Reuse of Masks and Respirators

The Institute of Medicine (IOM) evaluated the potential for decontaminating and reusing disposable facemasks and respirators and concluded, "With adequate time and planning, stockpiling or ramping up production of respirators and medical masks or both would ensure a plentiful supply for all those who need them, but with limited resources and time, supplies are likely to be insufficient. Thus, reality may require that disposable N95 respirators and surgical masks be pushed beyond the approved uses in the hope that they will provide some level of protection. Moreover, individuals with no access to respirators or masks, even disposables, may feel driven to invent their own respiratory protection measures—for example, they may put on woven masks not approved for medical uses in the United States or use household items such as towels or sheets."¹

Surgical Masks

Generally, medical (surgical) masks are recommended for one-time use and disposal, or at the least, the mask should be changed when it becomes moist or visibly soiled.

¹ Institute of Medicine of the National Academies, *Reusability of Facemasks During an Influenza Pandemic: Facing the Flu*, Committee on the Development of Reusable Facemasks for Use during an Influenza Pandemic, Washington DC, 2006, Page 2.

Disposable medical masks were not designed for reuse even by a single user and should be discouraged except in dire circumstances, such as a pandemic. The Food and Drug Administration states that washing disposable medical masks will destroy their barrier properties so that they will no longer prevent infection; thus, there is no way to disinfect disposable medical masks.² At a minimum, if reuse of the surgical mask is unavoidable, follow the recommendations for the reuse of a disposable respirator described below.

Disposable Respirators

In certain settings disposable respirators can be reused by the same wearer until they become damaged, moist, difficult to breathe through while wearing, or visibly soiled. However, the pandemic influenza virus may be spread by mucous membrane contact and by inhalation of droplets, and there is concern that the outside of the respirator may become contaminated with virus and then contaminate hands of the user. Although the IOM committee could not identify any suitable means of decontaminating disposable respirators, they recommended the following measures be implemented if an individual has to reuse a disposable respirator during an influenza pandemic:

- Protect the respirator from external surface contamination when there is a high risk of exposure to influenza (i.e., by placing a medical mask or cleanable face shield over the respirator to prevent surface contamination but not compromise the device's fit).
- Use and store the respirator in such a way that the physical integrity and efficacy of the respirator will not be compromised.
- Practice appropriate hand hygiene before and after removal of both the respirator and, if necessary and possible, appropriately disinfect the object used to shield it.

The IOM report, *Reusability of Facemasks during an Influenza Pandemic* is available at: http://www.nap.edu/catalog.php?record_id=11637#toc.

Improvised Face Coverings or Masks

Woven cloth masks currently available in many countries and are being reused in the clinical setting after washing and decontamination. These masks are not approved for occupational health care use in the U.S., but they may be the only option available for some individuals during a pandemic. Likewise, improvised face coverings, or masks (e.g., T-shirts, handkerchiefs, scarves) are likely to be used by some individuals when it

² Food and Drug Administration, 2006. *Personal Protective Equipment and Influenza Outbreaks, Including Bird Flu (Avian Influenza)*. Washington, DC.

is necessary to enter an infected environment, as when caring for an infected family member at home.

The effectiveness of cloth masks and other types of improvised coverings in blocking influenza transmission and fluid resistance is not known. As with any type of mask, the tighter the structure of the fabric, the better the potential for filtration, and the level of protection offered is also dependent on the fit of the device to the wearer's face. These improvised face covering should not decrease attention to other protective and hygiene measures.

Conclusions

The California Department of Public Health generally concurs with the CDC guidance on the use of facemasks and respirators by the public in non-occupational settings. During a pandemic, crowded settings, where a minimum six (6) feet of distance³ between people cannot be maintained, should be avoided. If crowded settings are unavoidable, facemasks or respirators are recommended for use by individuals who enter such settings to protect their nose and mouth from the droplets spread by other people, and to reduce the wearer's likelihood of spreading droplets to others from speaking, breathing, or unanticipated coughs and sneezes. Even with a facemask or respirator, the time spent in crowded settings or high risk settings should be as short as possible. If used correctly, facemasks and respirators may help prevent some exposures and are optimally effective when used along with other protective measures, such as social distancing and hand hygiene.

The N95 respirator may provide more protection than the facemask (e.g., surgical masks). Facemasks may offer more protection than cotton masks or improvised masks (e.g., homemade alternatives, handkerchiefs, scarves). Improvised fabric masks have not been evaluated, but may offer some protection rather than using no respiratory protection.

³ Historically, the area of defined risk has been a distance of <3 feet around the patient, based on epidemiologic and simulated studies of selected infections. Experimental studies with smallpox and SARS suggest that droplets from patients with these two infections could reach persons located 6 feet or more from their source. It may be prudent to don a mask when within 6 to 10 feet of a sick person or entering a crowded setting. From CDC, *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings*, 2007 found at <http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf>

At a minimum, persons caring for others with a respiratory illness during an influenza pandemic should wear a mask and place a mask on the ill person while in the same room. If available, respirators (e.g., NIOSH-certified N95 or P100 filtering facepiece respirators) may be considered for use in unavoidable close contact with an infectious person.

Currently, respirators may be purchased in hardware stores, and facemasks can be found in drug stores, and both types are widely available for purchase on the Internet. During an influenza pandemic, health officials may issue orders requiring that facemasks be worn in public venues or in specific locations (e.g., public transportation). Facemasks and/or respirators should be included in personal and family emergency preparedness supplies.

This guidance will be updated as federal guidance changes or new scientific evidence becomes available.